Date:- 10/10/18

VCD F.Y.B.Sc. CHEMISTRY P-II SEM-I MARKS:75 TIME:2.5HRS

NOTE: i) All the questions are compulsory.
ii) Figures to right indicate full marks.
iii) Use of non –programmable calculator / log table is allowed.

Q.1. Answer the following questions (any four) [20]

A) Write down the classification of elements into s,p,d,f- block on the basis of electronic configuration.
B) Define Effective Nuclear charge and Screening effect.
C) Define ionization enthalpy and factors affecting the magnitude of enthalpy of ionization.
D) Explain covalent bond in detail.
E) Distinguish between ionic bond and covalent bond.
F) Write down Lewis dot structure for following molecules: a) NH_4 b) BF_3
G) Explain Bohr's Theory.
H) Write down geometry of following molecules: a) BCl_3 b) SF_6

Q.2. Answer the following questions (any four) [20]

A) Explain sp^3-hybridisation of carbon atom in detail.
B) Define the following terms: a) inductive effect b) electromeric effect c) hyper conjugation d) resonance e) hybridisation.
C) Distinguish between hyper conjugation and resonance.
D) Explain inductive effect in detail.
E) Explain sp^3-hybridisation of oxygen atom in detail.
F) Distinguish between inductive effect and electromeric effect.
G) Distinguish between sigma bond and pi bond present in organic compound.
H) Explain sp^2-hybridisation of oxygen atom in detail with suitable example.

Q.3. Answer the following questions (any four) [20]

A) Explain homolytic fission and heterolytic fission.
B) Describe the various methods of formation of free radical.
C) What is carbocation? Explain shape and structure of carbocation.
D) Explain shape and structure of free radical.
E) Give IUPAC names of following compounds.

a) $CH_3-CH_2-CH_2-Br$

b) $C_2H_5-\overset{O}{\overset{\|}{C}}-CH_3$

c) $C_2H_5-NH_2$

d) $CH_3-CH_2-CH_2-CH_2-CH=CH_2$

e) $CH_3-\overset{O}{\overset{\|}{C}}-OH$

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F) Explain stability of carbocation on the basis of; a) inductive effect b) resonance c) hyperconjugation.

G) Explain acid and base on the basis of Lowery-Bronsted concept.

H) Write down structure of following compounds.

a) 2-Chloro butane b) Ethanal c) Methanamide d) 2-pentene d) Propanenitrile

Q.4. Answer the following questions (any three) [15]

A) Explain ionic bond in detail.

B) Explain sp^2-hybridisation of carbon atom in detail with suitable example.

C) Give IUPAC names of following compounds.

a) $CH_3-CH_2-O-C_3H_7$

b) $CH_3-CH_2-CH_2-\overset{\overset{O}{\|}}{C}-Br$

c) $H_3C-C\equiv C-CH_3$

d) $CH_3-\underset{\underset{OH}{|}}{CH}-CH_2-CH_3$

e) $CH_3-\underset{\underset{Cl}{|}}{\overset{\overset{Cl}{|}}{C}}-CH_2-CH_2-CH_3$

D) Write a note on Drawbacks of Rutherford's atomic model.

E) Explain sp^3-hybridisation of nitrogen atom in detail.

F) Distinguish between electrophile and nucleophile.

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